

Mechanism for exchanging chip-carrier plates
for use in a hybrid chip-bonding machine

CLAIMS

- 10 1. Mechanism for exchanging chip-carrier plates, in particular
for use in a hybrid chip-bonding machine (1), with
- a plurality of chip-carrier plates (12),
 - a magazine (10) to store the plurality of chip-carrier
plates (12),
 - a transport arrangement (40) comprising a first and
second clamping device (42, 44) that are disposed on a
movable holder (46), such that the transport
arrangement is designed to remove a selected chip-
carrier plate from the magazine, deliver it to a
processing station, in particular a chip-detaching
system (8), of the chip-bonding machine, and after
processing remove it from the processing station and
deposit it in the magazine,
 - a control means to move the chip-carrier plates within
the magazine in such a way that the selected chip-
carrier plate is positioned at a collection point to
be collected from the magazine, and
 - a control means to move the holder of the transport
arrangement,
- 30 characterized in that the first and second clamping devices
(42, 44) are disposed one above the other, in particular in
a vertical arrangement, on the holder (46) and are
constructed so that each can individually release or grip a
chip-carrier plate in one and the same angular position of
the holder.
- 35
2. Mechanism for exchanging chip-carrier plates according to
Claim 1,
characterized in that each of the first and second clamping
devices (42, 44) comprises a receiving element (48) with a

pneumatically or electrically actuated clamp (50, 52) for the controllable fixation of a chip-carrier plate (12) or the release thereof.

3. Mechanism for exchanging chip-carrier plates according to Claim 1,
characterized in that the chip-carrier plates (12) are constructed as plates (12.1) with a substantially square outer shape and engagement means, in particular bores (12.6, 12.7), to engage the clamping devices of the transport arrangement as well as holding means of the chip-detaching system.
4. Mechanism for exchanging chip-carrier plates according to claim 1,
characterized in that the chip-carrier plates (12) are designed to receive all conventional chip carriers, in particular of the type of the waffle pack, gel pack or carrier-film frame.
5. Mechanism for exchanging chip-carrier plates according to claim 1,
characterized in that the first and second clamping devices (43, 44) are attached to a common base element (54) that can be displaced vertically with respect to a housing (56) of the transport arrangement (40).
6. Method of operating the mechanism for exchanging chip-carrier plates in a hybrid chip-bonding machine, in particular according to one of the preceding claims, characterized in that when a transport arrangement of the exchanging mechanism is in a first working position, a step in which a selected chip-carrier plate is removed from a magazine is immediately followed by a step in which another chip-carrier plate, which has been taken out of a processing station, is deposited in the magazine, and

when the transport arrangement is in another working position, a step in which the chip-carrier plates taken from the magazine are transferred into the processing station, as well as a step in which the processed chip-carrier plate is removed from the processing station, are carried out in this or the reverse order, such that each transport event from the magazine to the processing station and in the reverse direction is carried out while a chip-carrier plate is being handled in the processing station.

7. Method according to Claim 6, characterized in that each transport event serves both to deliver a selected chip-carrier plate to the processing station and to return a chip-carrier plate from the processing station to the magazine.
8. Method according to Claim 6, characterized in that the transport arrangement moves only in a straight line in both directions between the first and second working positions.